papillomatous. Of this number only nine were in children under 15 years."

The growths possess the same characteristic to a certain extent as warts on children's hands and disappear at a certain age some time about puberty. Also are easily transplanted from one part of the larynx to another. Wherever a bit sticks there it has a tendency to flourish. The treatment is unsatisfactory. No drugs or local astringents have been of any use. Immediate tracheotomy has been argued by some because the stopping of the passage of the air might lead to the disappearance of the growth. In the hands of some this has proven satisfactory; however, there are cases on record where there has been recurrence after the wearing of the tracheotomy tube also a case where a tracheotomy tube had been worn for 20 years without disappearance of the growth. Tracheotomy may be necessarily resorted to where other methods do not avail. Laryngotomy is a method that has been employed in many cases and has its champions. Personally I feel that it is a method to be absolutely condemned under practically all circumstances. The fact that there are cases on record when it has been repeated 6 or more times and one case where it was performed 17 times in 2 years is sufficient to make it unwarrantable, if we consider the resulting cicatricial tissue.

Removal with the forceps and mirror is the ideal procedure, but not always possible.

The use of Killian's tubes or wider laryngeal spatula gives us a means of dealing, one would think, with most cases. However, considerable experience and more statistics are necessary to give this method its true worth.

In my opinion recurrent multiple papillomata should be handled in the following manner. The growth is to be removed by the mirror and forceps where this can be done and the treatment repeated just as often as necessary to give respiratory room. The voice is a secondary consideration. Where it is impossible to train the patient and I think considerable patience should be employed, the child is to be anesthetized and the growths removed through Killian's spatula or tube.

In case of any possibility of asphyxiation, tracheotomy should be performed, but after the crisis is past, I think the child should be anesthetized and the growths removed in one or other of the before mentioned ways and as soon as good space for breathing is established the tracheotomy tube be taken out.

Discussion.

Dr. Harry M. Sherman: Some years ago I was interested with Dr. Black in a case of papillomata of the larynx and in some ways the description which Dr. Sewall gave of his first case fits this in that a laryngotomy was done and the growth rmeoved; later it returned and the larynx was opened a second time and the growth again removed, and in spite of our efforts to keep the tracheotomy tube out we had to put it in, and I am certain that the child is still wearing the tracheotomy tube; this took place some years ago in the old Waldeck Hospital on Jones street. In this case it was exceedingly difficult to pick up and remove the papillomatous tissues; sometimes it was not easy to say what was papillomatous material and what was normal membrane, and the operation was itself, even with the larynx wide open, a disappointment. I think I may speak for Dr. Black in that. How it would be possible with reflected light to pick up and remove all the growth is difficult for me to understand. To do that a man must be a master of technic. In papillomata of the hands salicylic acid is frequently used and Dr. Black tried to make applications of salicylic acid in the larynx, but without result. I had hoped that we might get possession of the case again, but we have not done so, and I suppose that the child will go on wearing the tracheotomy tube for some time, as Dr. Sewall relates they are in the habit of doing.

Dr. E. C. Sewall: I think this must have been the same case of which Dr. Sherman has just spoken. These cases, as I said, need more experience and more statistics before we will be able to say we can remove these growths in all cases through the Killian method, and the fact that Dr. Sherman has opened the larynx externally in this particular case and has seen the difficulties of removing these growths, makes such a possibility doubtful.

SELECTED CHAPTERS IN THE STUDY OF SPEECH DISTURBANCES. NO. 2.—THE RESPONSIBILITY OF THE GENERAL PRACTITIONER TO THE CHILD WITH A SPEECH DEFECT, WITH SUGGESTIONS AS TO PROPHYLACTICS.*

By HENRY HORN, M. D., San Francisco.

It is beginning to be believed that the day of the general practitioner is departing and that the specialist is usurping the throne of the old family physician. No better refutation of this fact is needed than to observe the rapacious appetite of the general practitioner for special knowledge. It is the specialist who is being forced back into the ranks of the generalist by the tremendous border-line studies that are having a vast influence on his own narrow specialty.

This then is my excuse for introducing to the general practitioner what at first sight appears to be a special side of a special subject, and when it can be proven that 50% of all cases of speech defects are easily preventable, could the general physician, the teachers and the parents but have an elementary idea of speech prophylactics, it would seem that a campaign of education along these lines is surely needed.

The German Government have already, with their wonderful foresight in preventing anything which will later unfavorably influence the earning capacity of their citizens, taken measures to prevent this evil, but we have neither as a nation, as a state, or as a city, done anything in the way of preventive measures. The child with a speech defect, be it stuttering, stammering or lisping, be it word deafness or even a slight degree of weak-mindedness, enters our first grade without an examination of any kind and takes his chances with the normal child,—and with what result? He remains behind his class on an average of two years, and is two years longer a burden on the taxpayers; and, incidentally, is much more poorly fitted for his work, whatever it may eventually be. One per cent. and possibly more of the school children of San Francisco stutter; this means that over 400 of our children are stutterers, and that 10% or 4200 have some other form of speech defect. I give these figures with perfect confidence because it is the

* Read by invitation of the Alameda County Medical Society, November 15, 1910.

proportion of the stutterers in the German schools, and, strange to say, is exactly the percentage worked out in some of the Eastern cities.

These children are backward children, backward to exactly that extent that they cannot keep up with their classes. A study and an understanding of some of the general principles of speech defects will enable us to understand this backwardness and to prognosticate the outcome. Every child has inherent capabilities; the normal child develops his without special help, the backward child must be studied as an entity. Of all the accessories to the development of the mentally weak, speech is more important than any other of the special senses and it is the one that we can most easily manufacture for him.

Before specifically studying the subject of prophylaxis, I wish to say a few words as to the general etiology of speech defects. We have here no exception to the general rule that, given the causal elements, the treatment and cure is made very much easier. The empirical treatment of speech defects as carried on by hordes of advertising charlatans and others who have a superficial but no scientific knowledge of the subject may result in some permanent cures, but for the most part in only temporary ones. We have 300,000 stutterers in the United States. A fourth of them would recover of themselves without treatment, and this fourth is the percentage that makes the business of the guarantee cure specialist possible.

In this paper I will confine myself to but two forms of speech defects, so that what I am going to say will deal principally with the stutterer and the stammerer.

The clinical features of each case are so different that a definite typical type is hard to describe. The etiology of the trouble is equally complex. The temperament of the child is one of the principal predisposing causes. A phlegmatic child very seldom stutters; the picture is always of an easily excited and nervous individual.

The nervous temperament may be inherited from the parents. The direct inheritance of stuttering itself is very seldom, in fact some writers believe that it does not take place. This view is a bit radical and not supported by cases which have been reported by both Gutzmann and Cohn.

It is a common belief that weak-mindedness is a potent cause of stuttering. Such is not the case; in fact, the stutterer is usually up to the average or a little better than the average child. It is not on account of their stupidity that they are always two years behind the normal child, but because their physical infirmities make it impossible for them to keep up. The complete imbecile does not speak at all, the half imbecile stammers, but we very seldom indeed find a stutterer among them. In the Dalldorf Institute for Idiots, among 224 children 36% stammered, but only 7 children or 3% stuttered.

In contradistinction to these predisposing causes which we have just mentioned we have causes which depend upon the environment and which are to be spoken of later. We will show that during the school period the number of stutterers is almost tripled. At the time of the second dentition and at puberty the percentage takes a sudden leap upward.

The same thing applies to the time of puberty. Here we are apt to find stuttering developed where it was never before ever suspected. It is a time usually when the child is studying hard. In our American life, on account of social conditions, the boy begins to go out to parties and dances. His day is all too short and his hours of sleep are cut down. The nervous system is in a more or less unstable condition and it is not to be wondered at if the previous tendency to nervous disquiet is accentuated and we have a stutterer develop as a result.

We must never forget that when the child enters school at the age of six he may not be a stutterer in the ordinary sense of the term, but he will have a tiny tendency that way that the vigilant teacher will recognize as a slight, a very slight, deviation from the normal either in the pronunciation of the words, in a slight hesitation over certain words or in a slight embarrassment in speaking. Here is where the teacher, if he could but have his attention called to this subject, could be of inestimable value to the child and to his future life. By the closest observation, with some sort of an idea of what to look for, he would be able to recognize preliminary symptoms such as beginning changes in the breathing, repetition of initial vowels or consonants, etc., even sooner than the child's parents. In school the environmental conditions are entirely different from those at home. Here the child is ever afraid of the shame

(Continued in February.)

MECHANICAL EFFICIENCY.*

By JAMES T. WATKINS, M. D., San Francisco.

The purpose of the group of lectures of which this is one is to give you some insight into the art, or as it is fast becoming, the science of right living; right living especially as it applies to yourselves and to your charges. In my own lecture I shall briefly direct your attention, first, to what we have come to regard as the state of maximum efficiency of the human body. I shall then dwell upon conditions which are essential to this state of well being. Finally, I shall discuss some of the commoner causes of physical inefficiency. Such a study is peculiarly the function of that branch of the healing art called orthopedic surgery. While the latter used to be defined as that specialty which deals with the prevention and cure of deformities, to-day its scope has become broadened till it might properly be described as "Scientific Management" applied to the human body. To certain aspects of this subject, it is my privilege at this time to direct your attention.

More than anything else the human organism resembles a delicately balanced machine, which is called upon to perform work whose character varies in inconceivably many ways and degrees. Work of the higher mental processes, work of the viscera, work of the muscles, has to be performed under constantly varying conditions and constantly changing speeds.

When the several parts are working rightly, there is a minimum of friction, and the efficiency of the individual is at its maximum. We call this condition perfect health. Any departure from this state of correlation, increases strain or friction, wastes energy and, by just so much, lessens efficiency. No

* An address on Orthopedic Surgery, delivered before the Teachers of the San Francisco Public Schools.